GROUP 54A

CHASSIS ELECTRICAL

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DIAGNOSTIC SYSTEM

GENERAL INFORMATION

M2544100200115

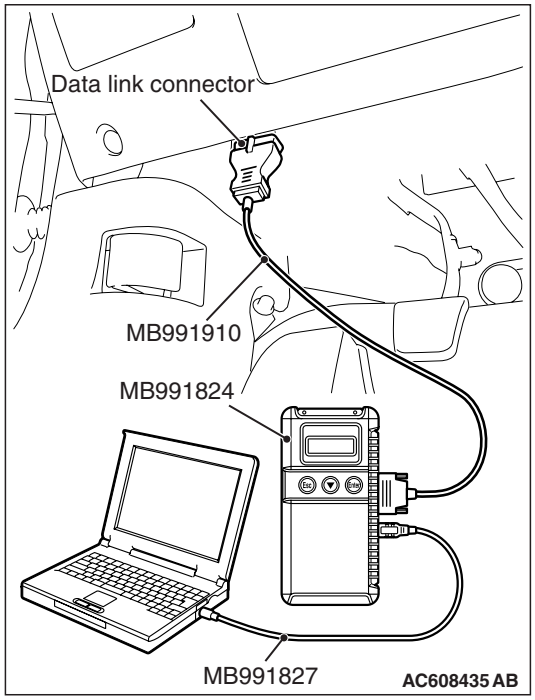
The data link connector for M.U.T.-III inspection is installed near the driver's right leg under the in order to improve service quality.

Diagnostic function	ECM	CVT	Auto-cruise control system	Keyless operation system (KOS)	WCM
DTC code sent	•	•	–	•	•
Output of service data	•	•	•	•	•
Actuator test	•	–	–	•	–
Erase DTCs using scan tool	•	•	–	•	•
Freeze frame data	•	•	–	•	•
ECU information display	•	•	•	•	•

Diagnostic function	ABS	SRS air bag	Occupant classification-ECU	Combination meter	ETACS
DTC code sent	•	•	•	•	•
Output of service data	•	•	•	•	•
Actuator test	•	•	–	•	–
Erase DTCs using scan tool	•	•	•	•	•
Freeze frame data	•	•	•	•	•
ECU information display	•	•	•	•	•

Diagnostic function	Audio	Audio visual navigation unit	Satellite radio	Hands-free module	A/C
DTC code sent	•	•	•	•	•
Output of service data	•	–	–	•	•
Actuator test	–	–	–	•	•
Erase DTCs using scan tool	•	•	•	•	•
Freeze frame data	•	•	•	•	•
ECU information display	•	•	•	•	•

DATA LINK CONNECTOR



Data link connector (black)	
1	Diagnosis control
2	–
3	–
4	Earth
5	Earth
6	CAN communication line (CAN_H)
7	ECM
8	–
9	–
10	Pulse check
11	–
12	–
13	–
14	CAN communication line (CAN_L)
15	–
16	Battery power supply

BATTERY

GENERAL INFORMATION

M2544200200219

Item	75D23L
Voltage V	12
Capacity (5-hour rate) Ah	52
Electrolytic fluid specific gravity [fully charged state at 20° C (68° F)]	1.280

LIGHTING

GENERAL INFORMATION

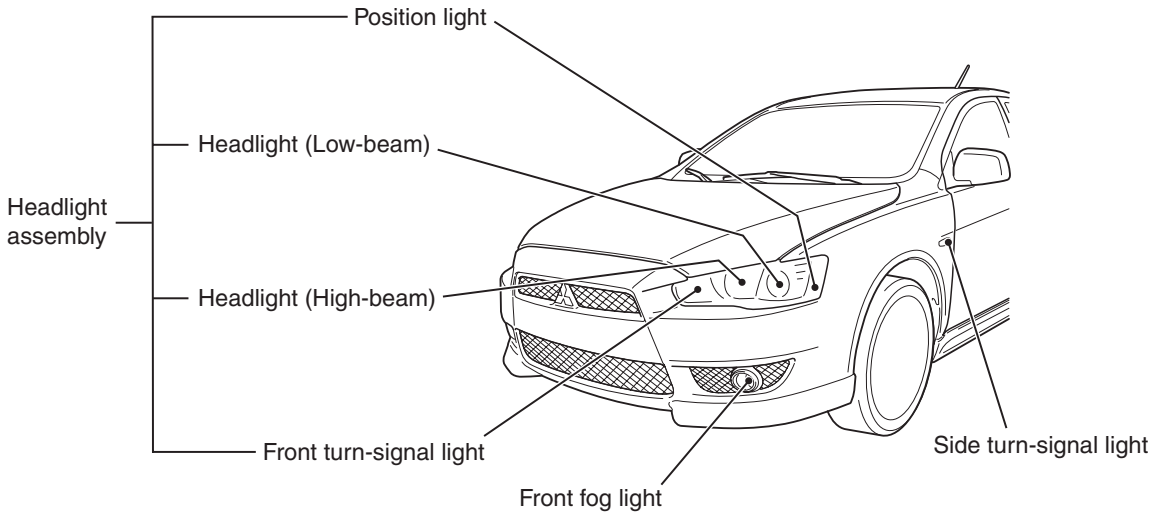
M2544300200186

- For exterior lights, the headlight assemblies and front fog lights <GTS> have been installed to the front of the vehicle, the side turn-signal lights to the sides of the vehicle (to the fender panel), and the rear combination light assemblies, taillight assemblies, license plate lights, and high-mounted stoplights to the rear of the vehicle.
- For interior lights, the front dome light <ES, GTS>, rear dome light <Vehicle without sunroof>, luggage compartment light, center console down light, and ignition key cylinder illumination light <Vehicle without KOS> have been installed.

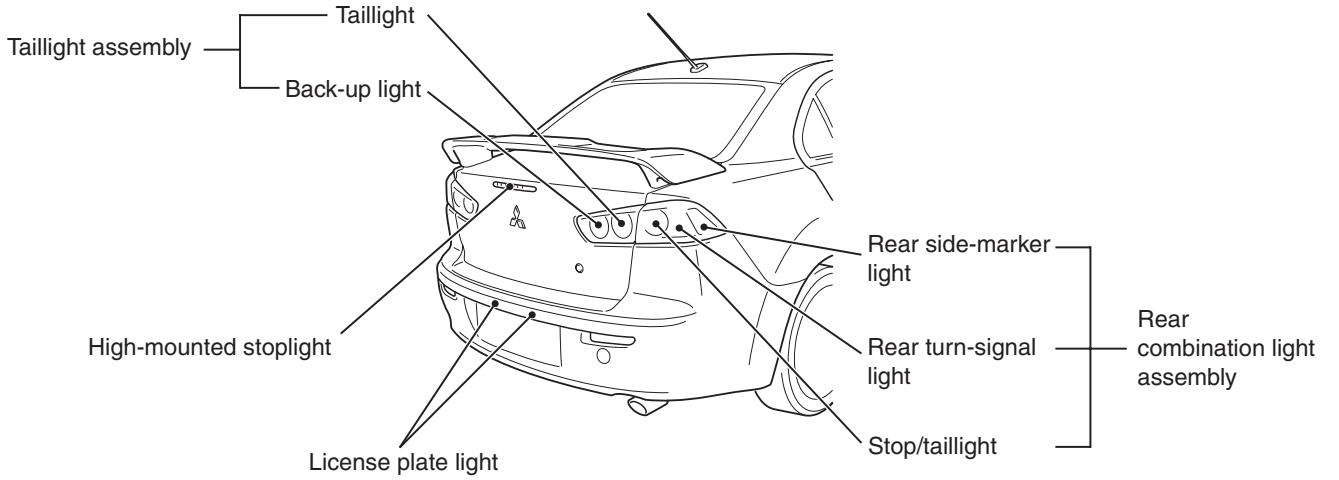
EXTERIOR LIGHTS

M2544300300172

Construction diagram



AC608726AB



AC608727AB

- For the headlight assembly, the four-headlight incorporating the front turn-signal light and the position light has been adopted. Also, the low-beam dimmer daytime running light has been equipped as standard.
- The front fog light with no-cut lens has been adopted for better appearance. <GTS>
- The side turn-signal lights have been installed to the fender.
- The rear combination light assembly are integrated with the stop/taillight, rear turn-signal light and rear side-marker light.
- The taillight assembly are integrated with the taillight and back-up light.
- The LED type high-mounted stoplight has been integrated into the trunk lid.
- The lighting system is provided with headlight automatic-shutdown function and daytime running light function (Refer to P.54A-7).
- For the flasher timer function of turn-signal, the comfort flasher function has been adopted to improve the operability when changing lanes. When the turn-signal light switch (lighting switch) is operated for a short time, this function flashes the turn-signal light of the operated direction three times (Refer to P.54A-7).

Specifications

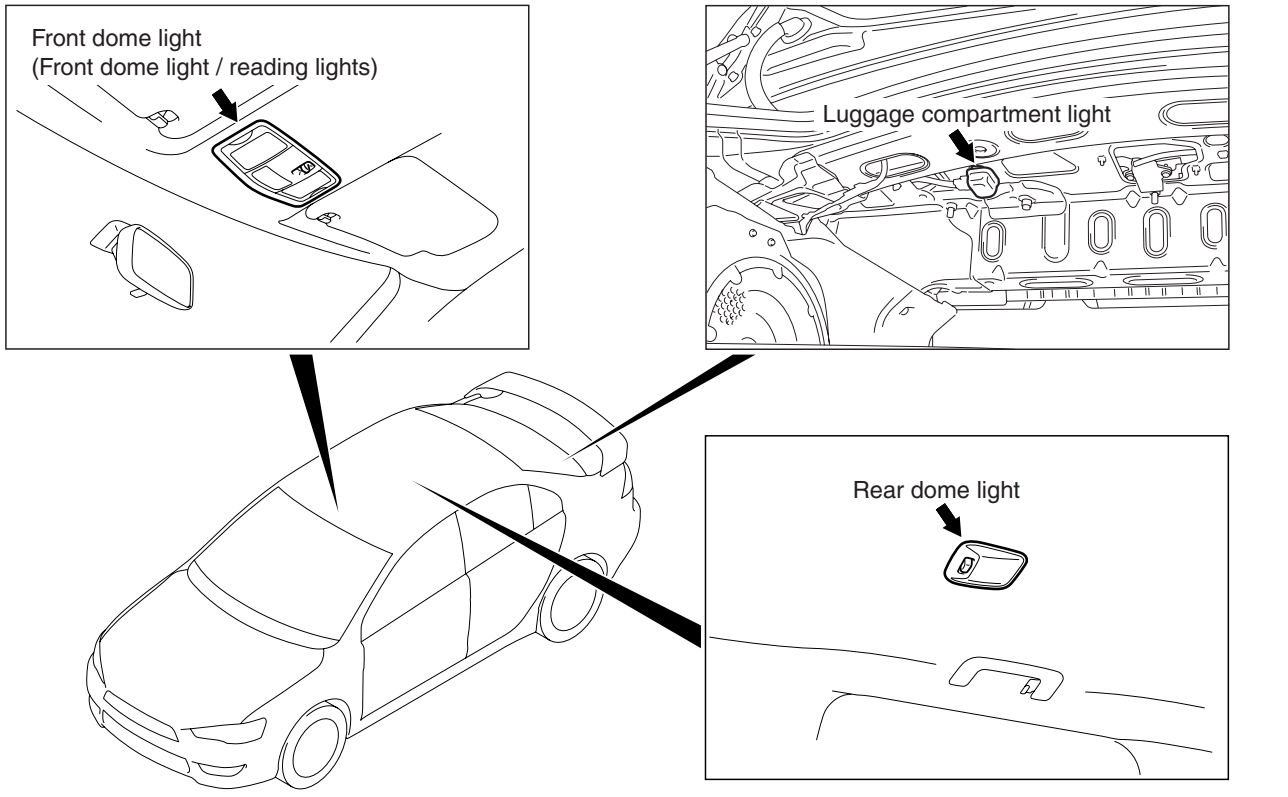
Item		Specifications
Headlight assembly	High-beam W <halogen headlight>	60 (HB3)
	Low-beam W <halogen headlight>	51 (HB4)
	Position light W	5 (WY5W)
	Front turn-signal light W	21 (WY21W)
Front fog light W		55 (H11)
Side turn-signal light W		5 (W5W)
Rear combination light assembly	Stop/taillight W	21 / 5 (W21 / 5W)
	Rear turn-signal light W	21 (W21W)
	Rear side-marker light W	5 (W5W)
Taillight assembly	taillight W	5 (W5W)
	Back-up light W	21 (W21W)
High-mounted stoplight		LED type
License plate light W		5 (W5W)

NOTE: The brackets ( ) show the bulb type.

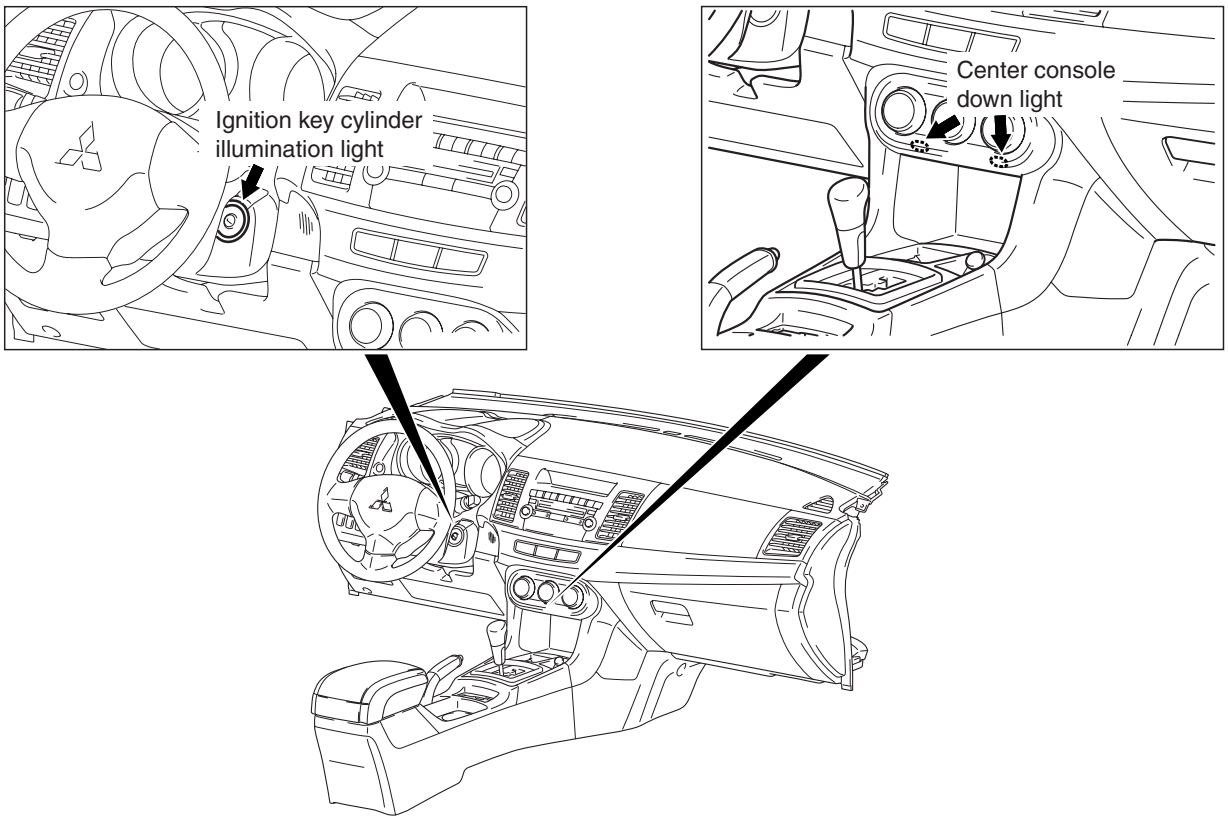
INTERIOR LIGHT

M2544300400157

Construction diagram



AC608728AB



AC608811AB

- A front dome light, installed to the front part of the roof, has been equipped with the lens-push type front dome light / reading light which can be operated easily from the driver's and front passenger's seat, offering excellent operability for turning on and off the light. <ES, GTS>
- The rear dome light, which illuminates the rear passenger's seat, is installed above the rear seat. <Vehicle without sunroof>
- The luggage compartment light is installed to the upper part of the luggage compartment.
- An ignition key cylinder light has been added to the ignition key cylinder. <Vehicle without KOS>
- The center console down light has been installed to the upper surface of the center lower box.
- The dimmer interior light control function and ignition key cylinder illumination light control function have been adopted for the interior light (Refer to Function and Control by ETACS-ECUP.54A-7).

Specifications

Item	Specifications
Front dome light (front dome light / reading light) W × quantity	8 × 2
Rear dome light W	8
Luggage compartment light W	5
Ignition key cylinder illumination light W	1.5
Center console down light	LED type

FUNCTION AND CONTROL BY ETACS-ECU.

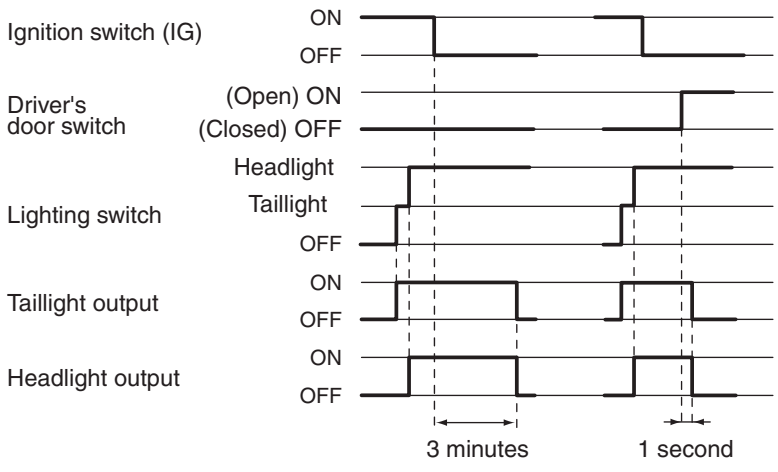
M2544300600151

Following functions are controlled by ETACS-ECU.

Function		Function description
Headlight	Headlight automatic-shutdown function	
Flasher timer function	Turn-signal light	
	Comfort flasher function	
	Hazard warning light	
Daytime running light	Daytime running light function	
Fog light	Front fog light function	
Interior light	Interior light dimmer control function	
	Interior light automatic-shutoff function	
	Ignition key cylinder illumination light control function	

HEADLIGHT

HEADLIGHT AUTOMATIC-SHUTDOWN FUNCTION THE INITIAL CONDITION: WITH FUNCTION> (Specification C: When the ignition switch is in OFF position is turned ON, the headlights are not turned OFF automatically.)



AC606266AD

Even when the lighting switch (taillight switch or headlight switch) is ON, the headlight (including the taillights) turns off automatically under any of the following conditions to prevent the battery discharge caused by unattended operation.

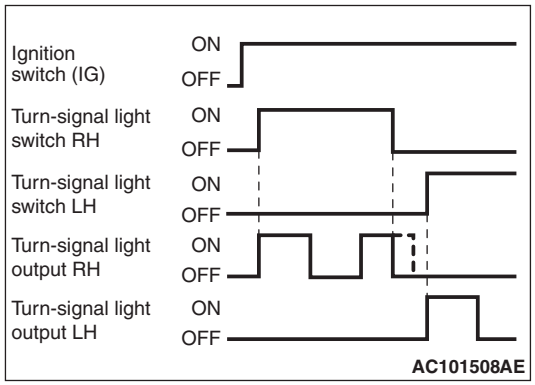
- If the ignition switch is turned OFF with the lighting switch ON, the light turns off automatically after 3 minutes. If the driver's door is opened during the 3 minutes, the light turns off after one second (One seconds before turning off, the light reminder tone alarm sounds. However, if the driver's door is opened with the ignition key inserted, the key reminder alarm tone alarm operates in the first priority).
- If the lighting switch is turned to the taillight position from OFF with the ignition switch OFF, the lights do not turn off automatically.

After this function is activated, when the lighting switch is turned OFF and then ON or the ignition switch is turned ON, the headlights illuminate again.

NOTE: This function can be cancelled through customization (Refer to Customize Function P.54A-12).

FLASHER TIMER FUNCTION

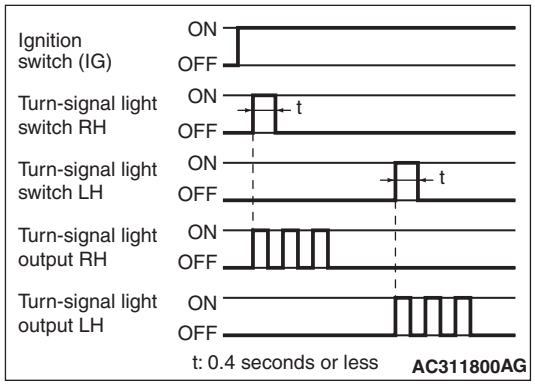
TURN-SIGNAL LIGHT (INITIAL SETTING: TURN SIGNAL LIGHT CAN BE OPERATED WHEN THE IGNITION SWITCH IS IN THE ON POSITION)



When the turn-signal light switch is ON (LH or RH) with the ignition switch ON, the turn-signal light output (flash signal) is turned ON.
If the light bulb of the front or rear turn-signal light has burned out, the flashing speed becomes faster to alert the driver that the light bulb has burned out.

NOTE: Using a customization function, this function becomes available even when the ignition switch is in the ACC position. For more information about the customization feature, refer to P.54A-12.

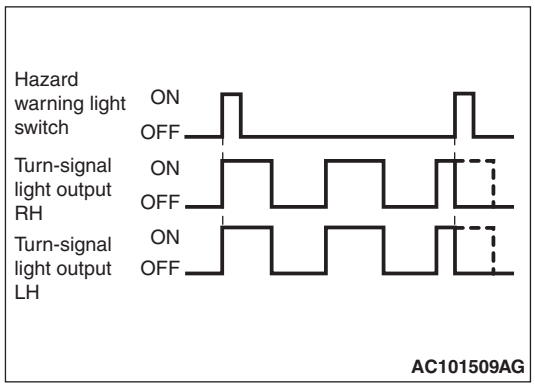
COMFORT FLASHER FUNCTION (THE INITIAL CONDITION: WITH FUNCTION)



With the ignition switch in the ON position, when the turn signal switch is turned ON momentarily (0.4 second or less), ETACS-ECU turns ON the turn signal light output, and flashes the turn signal light three times.

NOTE: The comfort flasher function can be cancelled through customization (Refer to Customize Function P.54A-12).

HAZARD WARNING LIGHT



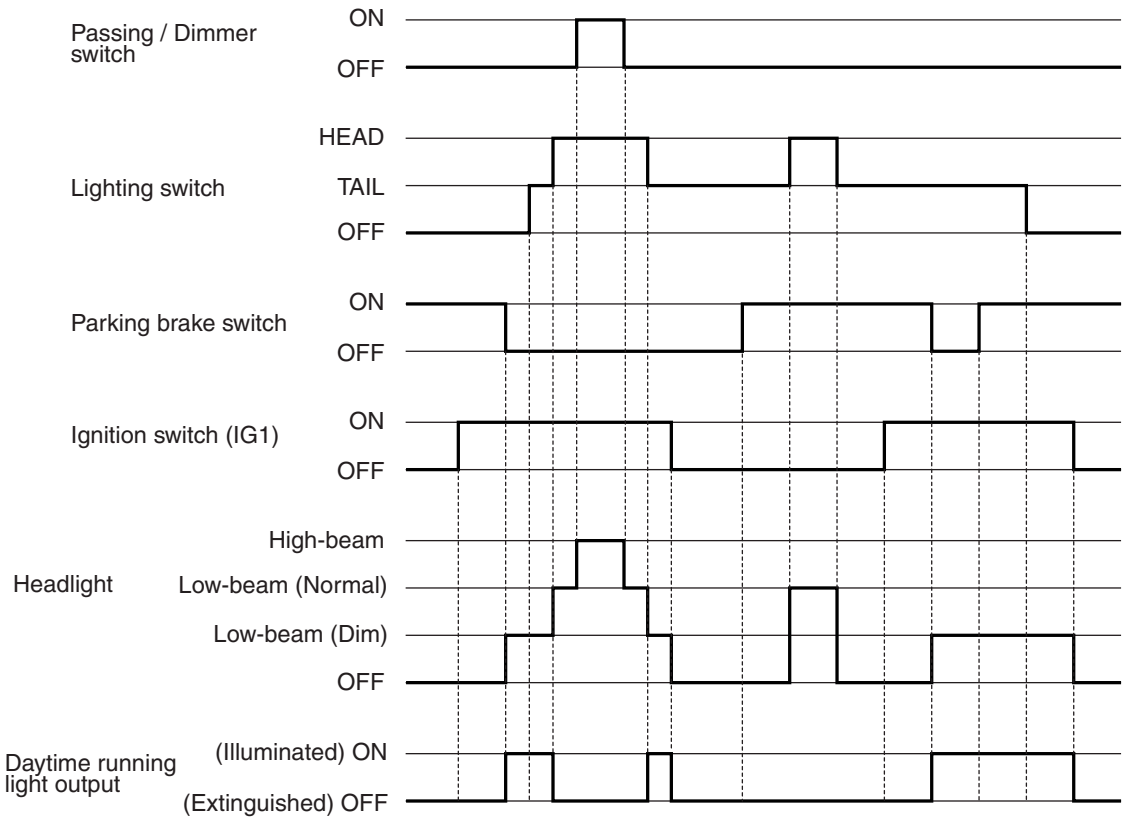
ETACS-ECU detects the signal that changes the hazard warning light switch from OFF to ON, and reverses the flashing state by the signal (to the flashing state when the hazard warning light is not flashing, and to the turned OFF state when flashing).

NOTE:

1. *The push-return switch has been adopted for the hazard warning light switch.*
2. *Even if the light bulb has burned out, the flashing speed of the hazard warning light is not changed.*

DAYTIME RUNNING LIGHT

DAYTIME RUNNING LIGHT FUNCTION



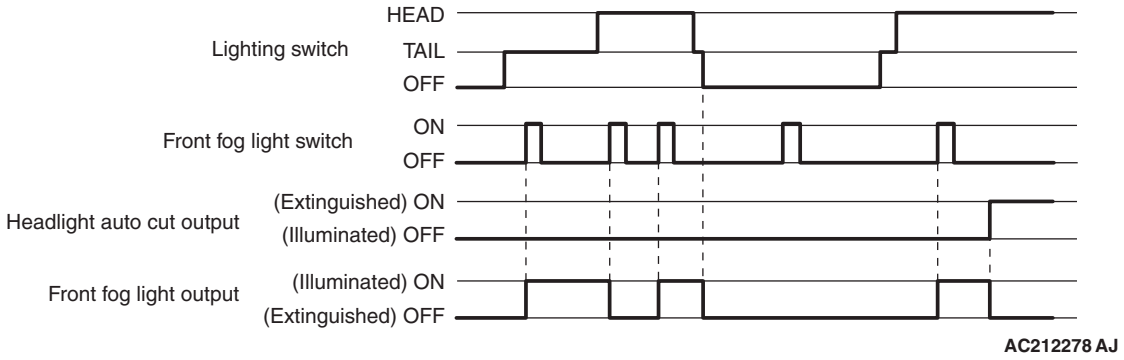
AC609306AB

ETACS-ECU releases the parking brake (the parking brake switch turns OFF), illuminates the low-beam headlights with the lighting switch OFF or in the tail-light position. Also, ETACS-ECU illuminates the low-beam headlights of 100% illuminance.

When the ignition switch is turned to the "LOCK" (OFF) position while the low-beam headlights are illuminated with the brightness reduced, the ETACS-ECU extinguishes the low-beam headlights.

FOG LIGHT

FRONT FOG LIGHT FUNCTION



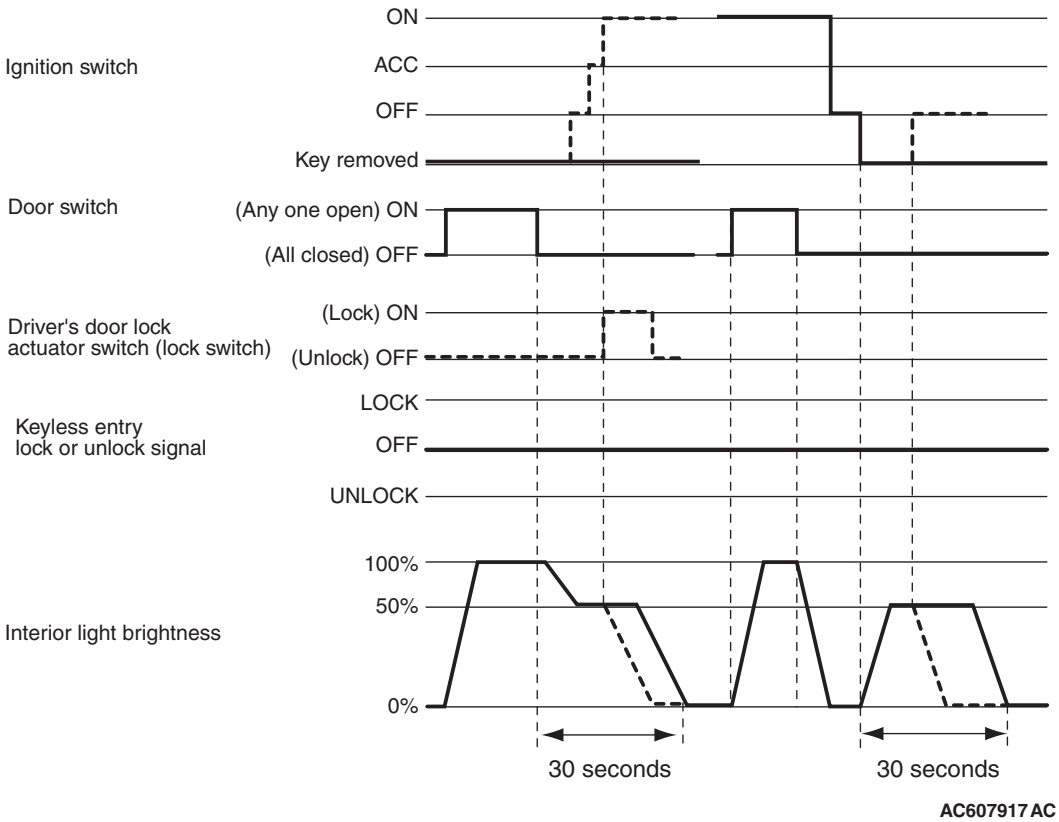
AC212278 AJ

When the front fog light switch is turned to ON with the taillights or the headlights lit (the taillight switch or the headlight switch is ON), the ETACS-ECU illuminates the front fog lights.

If the taillight or the headlight is turned off with the lighting switch OFF while the front fog lights lit, the front fog lights turn off at the same time to prevent unattended operation.

INTERIOR LIGHT

INTERIOR LIGHT DIMMER CONTROL FUNCTION (THE INITIAL CONDITION: 30 SECONDS)



AC607917 AC

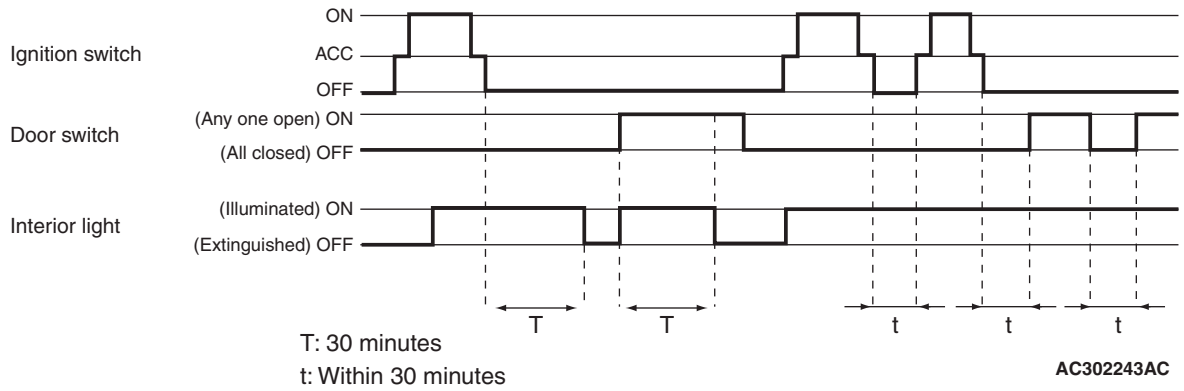
When the interior light switch is set to the DOOR position, ETACS-ECU controls the interior light as follows.

1. When the ignition switch is OFF:
   By opening any door, the light turns ON (100%), and dims (50%) when the door is closed, then and turns off after 30 seconds.
   However, when the ignition switch is turned ON or the door lock is operated, the lights turn off at that time.
2. When the ignition switch is ON:
   By opening any door, the light (100%) turns ON and OFF when the door is closed.
3. When all doors are closed, and the ignition key is removed*:
   By removing the ignition key with all doors closed, the light turns ON 50%, and turns off after 30 seconds.
   By inserting the ignition key again or operating the door lock with the light lit, the lights turns off.

NOTE:

- **: For the vehicles with KOS, it is operated the same way when the steering lock is locked or when the emergency key is removed from the key cylinder.*
- *For the vehicles with the keyless entry system, the delayed light-off time and the operation times of the keyless entry interior light answer back can be changed by the customize function (Refer to P.54A-12).*

INTERIOR LIGHT AUTOMATIC-SHUTOFF FUNCTION (THE INITIAL CONDITION: 30 MINUTES)

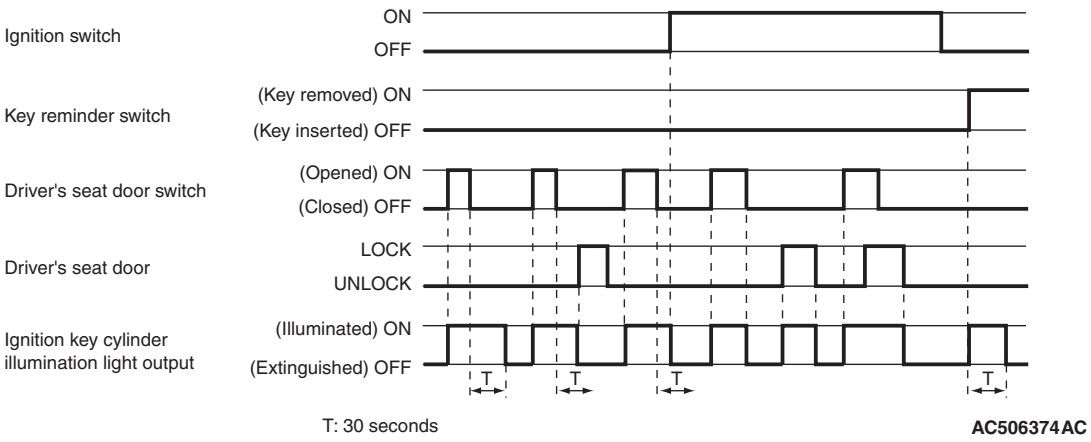


When an interior light such as the dome light [all interior lights connecting to the dome light fuse (the front dome light, the rear dome light, and the ignition key cylinder illumination lights)] is lit, but either one of the conditions is met, the interior light is turned off automatically for preventing the battery discharge caused by the unattended operation or the door-ajar.

- After 30 minutes with the interior light lit while the ignition switch is OFF, the light turns off automatically.
- After 30 minutes with any door opened while the ignition switch is OFF, the light turns off automatically.
- After the auto-turn OFF, the interior light returns to the illumination state when the doors are opened/closed, keyless entry transmitter switch is operated, or ignition switch is turned to ACC position. After returning, the light turns OFF after 30 minutes, when the interior light auto turn off condition is met.

NOTE: The interior light automatic shut-off time can be adjusted by the customize function (Refer to P.54A-12).

IGNITION KEY CYLINDER ILLUMINATION LIGHT CONTROL FUNCTION



The ETACS-ECU controls the ignition key cylinder illumination light as described below.

- With the ignition switch OFF, the light is illuminated when the driver's door is opened, and it is turned off 30 seconds after the driver's door is closed. However, the light is turned off if the ignition switch is turned ON or doors are locked within 30 seconds.
- When the ignition key is removed from the ignition key cylinder, the light illuminates for 30 seconds.*

*NOTE: *: For the vehicles with KOS, it is operated the same way when the steering lock is locked or when the emergency key is removed from the key cylinder.*

CONFIGURATION FUNCTION

M2544300700147

With the scan tool MB991958 operation, the following functions can be programmed. The programmed information is held even when the battery is disconnected.

Adjustment item (scan tool display)	Adjustment item	Adjusting contents (scan tool display)	Adjusting contents
ACC power auto cut	Time to ACC power cut-off when the ignition switch is in the ACC position	Disable	No function (default)
		30 min	30 minutes
		60 min	60 minutes
Turn power source	Adjustment of turn-signal light operation condition	ACC or IG1	Operable with ACC or ON position
		IG1	Operable with ON position (default)
Comfort flasher	With/without comfort flasher function	Disable	No function
		Enable	With function (default)
Comfort flasher switch time	Switch operation time to activate the comfort flasher function	Normal	0.4 seconds (default)
		Long	0.8 seconds

Adjustment item (scan tool display)	Adjustment item	Adjusting contents (scan tool display)	Adjusting contents
Hazard answer back	Adjustment of the number of keyless hazard warning light answer back flashes	Lock:1, Unlock:2	LOCK: Flashes once, UNLOCK: Flashes twice (default)
		Lock:1, Unlock:0	LOCK: Flashes once, UNLOCK: No flash
		Lock:0, Unlock:2	LOCK: No flash, UNLOCK: Flash twice
		Lock:2, Unlock:1	LOCK: Flash twice, UNLOCK: Flash once
		Lock:2, Unlock:0	LOCK: Flash twice, UNLOCK: No flash
		Lock:0, Unlock:1	LOCK: No flash, UNLOCK: Flash once
		Lock:0, Unlock:0	No function
Dome light delay timer with door	Adjustment of interior light delay shutdown time	0sec	0 second (no delay shutdown time) (default <Vehicles without central door locking system>)
		7.5sec	7.5 seconds
		15sec	15 seconds
		30sec	30 seconds (default <Vehicles with central door locking system>)
		60sec	60 seconds
		120sec	120 seconds
		180sec	180 seconds
Headlight auto cut customize	Adjustment of headlight automatic shutdown function	Disable	No function
		Enable (C-spec.)	With function (default)
Interior light auto cut timer	Adjustment of interior light automatic shutdown function operation time	Disable	No function
		3min	3 minutes
		30min	30 minutes (default)
		60min	60 minutes

COMBINATION METER

GENERAL INFORMATION

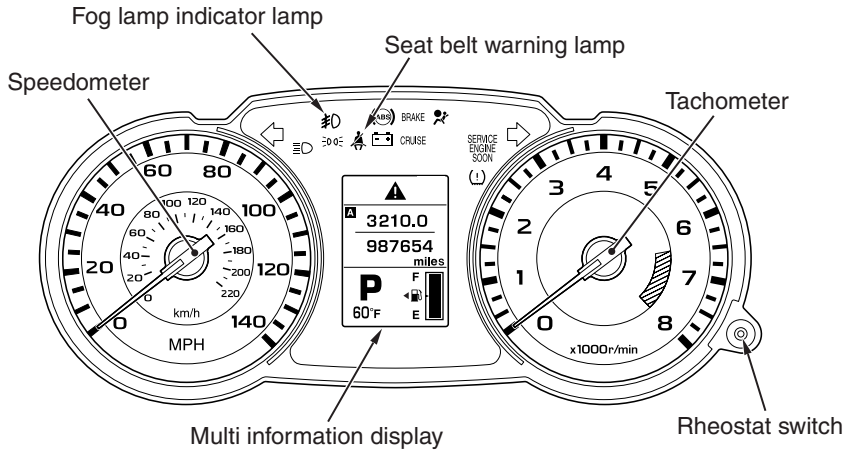
M2545500200194

Metallic silver and black are used as the base color of the combination meter. The meter has the independently arranged speedometer to the left, indicator to the upper center, multi information display (large full dot matrix LCD display) to the lower center, tachometer to the right, so that its sporty design allows a driver to easily distinguish the information from the meters. The combination meter offers the following features:

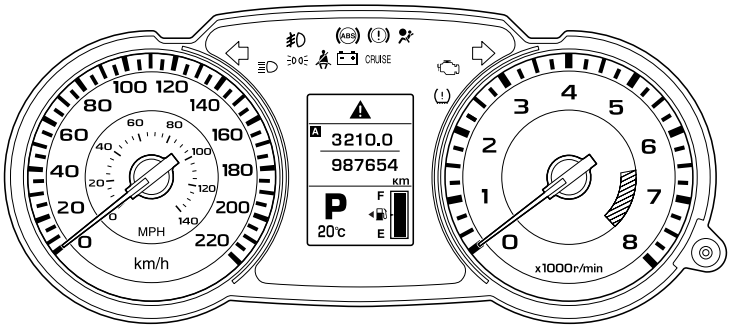
- The multi information display that displays two colors (red and yellow) has been adopted.
- The multi information display can be switched to display the trip meter.
- The service reminder function has been adopted which notifies the users of the next periodic inspection timing using the driving distance and elapsed time.
- By operating the rheostat switch, the brightness of the meter and illumination can be adjusted in eight steps.
- The layout has been simplified by displaying what is required to meet the legislative requirements with the indicator, and by displaying other things with multi information display.
- Even with the ignition switch in the OFF position, the odometer, trip meter, or service reminder information can be displayed by pressing the meter information switch.
- A tone alarm is integrated in the combination meter so that the alarm contents or the operation status of switches can be checked with the tone alarm sound.

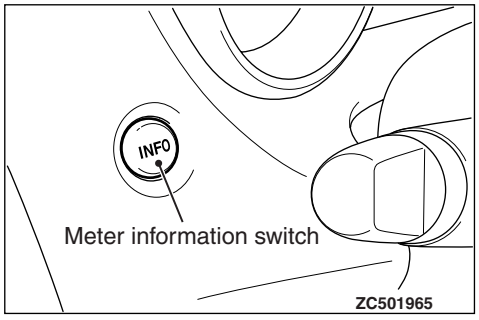
CONSTRUCTION DIAGRAM

<Vehicles for USA>



<Vehicles for CANADA>





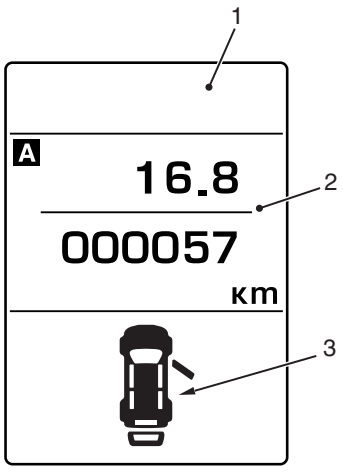
AC608428AB

MULTI INFORMATION DISPLAY

M2545500500065

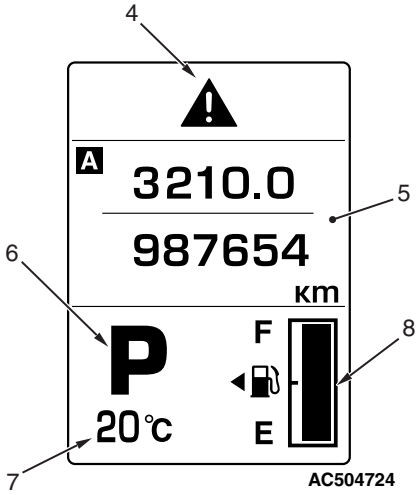
The multi information display can display the following items: various warnings, odometer and trip meter, service reminder information, engine coolant temperature, remaining fuel amount, ambient temperature, selector lever position, average and instantaneous fuel consumption, possible cruising distance, average vehicle speed, and others. Displayed contents can be switched by operating the meter information switch. Also, the displayed language or unit on the multi information display can be changed from the function setting screen.

When the ignition switch is LOCK (OFF) position



AC505424

When the ignition switch is ON position



AC504724

AC610301AB

When the ignition switch is LOCK (OFF) position

Item		Content
1	Caution mark display screen	When warnings are displayed on the interrupt display screen, pressing the meter information switch turns off the warning display and displays the caution mark. Caution mark is displayed also when two or more alarms occur simultaneously.
2	Information screen/interrupt display screen	The odometer and trip meter or service reminder information will be displayed. Also, appropriate contents are displayed when a warning is issued.
3	Door-ajar warning display screen	Displays the door or trunk lid that is open.

When the ignition switch is ON position

Item		Content
4	Caution mark display screen	When warnings are displayed on the information screen, pressing the meter information switch turns off the warning display and displays the caution mark. Caution mark is displayed also when two or more alarms occur simultaneously.
5	Information screen/interrupt display screen	A screen changes in following order by operating meter information switch. 1. Odometer/Trip odometer A 2. Odometer/Trip odometer B 3. Service reminder (when service reminder function is effective) 4. Engine coolant temperature display 5. Driving range display 6. Average speed display, average fuel consumption display, momentary fuel consumption display 7. Function setting screen 8. Redisplay of a warning display screen Also, appropriate contents are displayed when a warning is issued.
6	Selector lever position display screen	Displays the selector lever position.
7	Outside temperature display screen	Displays the ambient temperature.
8	Fuel remaining display screen	Displays the remaining fuel amount.

SERVICE REMINDER FUNCTION

Displays the periodic inspection timing based on the predetermined schedule. With the inspection timing coming up (warning start point of the warning criteria is achieved), when the ignition switch is turned to ON position, the service reminder function displays "PERIODIC INSPECTION" for 4 seconds to inform the inspection timing. When the "PERIODIC INSPECTION" achieves the warning end point of warning criteria, it will be turned off by the scan tool MB991958 special function or the meter information switch special operation*.

NOTE: The service reminder function is disabled at shipment. If any of the following conditions is met, the function becomes available. When delivering the vehicle to the customer, enable the service reminder function, and check that the schedule is "NAS 10".

- *The ignition switch is turned to "ON" while pressing the meter information switch.*
- *The driving distance of the odometer reaches 100 km or 60 miles.*

NOTE: Using the scan tool MB991958 special functions or the meter information switch special operation, the schedule can be changed and the service reminder function can be made unavailable.*

*NOTE: *: For details about the meter information switch special operation, refer to the Service Manual.*

SCHEDULE TABLE

Schedule	Contents of schedule	
NAS 10 (initial setting)	Elapsed time (month)	Every 6 elapsed months
	Driving distance (miles)	Every 7,500 miles of driving distance
	Driving distance (km)	Every 12,000 km of driving distance
NAS 11	Elapsed time (month)	Every 3 elapsed months
	Driving distance (miles)	Every 3,750 miles of driving distance
	Driving distance (km)	Every 6,000 km of driving distance
NAS 20	Elapsed time (month)	Every 5 elapsed months
	Driving distance (miles)	Every 5,000 miles of driving distance
	Driving distance (km)	Every 8,000 km of driving distance
NAS 21	Elapsed time (month)	Every 4 elapsed months
	Driving distance (miles)	Every 3,750 miles of driving distance
	Driving distance (km)	Every 6,000 km of driving distance
Optional INT	The optional schedule can be set. (Only M.U.T.-III can be set.)	
OFF Display	Without function. "OFF" is displayed on the odometer/tripmeter.	
Function OFF	Without function (Only M.U.T.-III can be set.)	

NOTE: For schedule, "JPN", "GCC/EXP", "EUR" and "MMAL" can also be selected. However, the setting shall be for "NAS" only.

WARNING CRITERIA (WARNING START AND END POINTS)

Elapsed time		Driving distance (km)		Driving distance (miles)	
Warning start point	**Warning end point**	**Warning start point**	**Warning end point**	**Warning start point**	**Warning end point**
–15 days	+15 days	–500 km	+500 km	–300 miles	+300 miles

TONE ALARM

M2545500600062

Using its own signal or signal sent via CAN communication, the combination meter sounds the integrated tone alarm.

Item	Relating ECU
Seat belt reminder function	Combination meter
A/T shift cancel tone alarm <A/T>	Transaxle control module
Paddle shift cancel prohibition tone alarm <A/T - vehicles with paddle shift>	
Theft-alarm function	ETACS-ECU
Keyless operation key reminder tone alarm function <vehicles with KOS>	KOS
Ignition key reminder tone alarm function	ETACS-ECU
Light reminder tone alarm function	ETACS-ECU
Door-ajar warning tone alarm function	ETACS-ECU
Freeze warning tone alarm	A/C-ECU
Parking brake reminder tone alarm function	Combination meter
Multi information display interrupt display tone alarm	Combination meter
ETACS-ECU function customization tone alarm	ETACS-ECU
A/C operation tone alarm	A/C-ECU
Audio operation tone alarm	Radio and CD player, CD changer or audio visual navigation unit
Meter information switch operation tone alarm	Combination meter
Turn-signal light tone alarm function	ETACS-ECU

SEAT BELT REMINDER FUNCTION

When the driver's seat belt is released

1. When the ignition switch is turned ON, the driver's seat belt indicator illuminates and the alarm sounds for 6 seconds.
2. 60 seconds after the ignition switch is turned ON, if the vehicle speed exceeds 8 km/h (5mph), the driver's seat belt indicator illuminates and blinks for 90 seconds. The alarm sounds simultaneously with the blinks of the indicator.
3. On Step 2 completion, if the seat belt is not fastened when the vehicle speed changes from 3 km/h (2mph) to 8 km/h (2mph), the indicator illuminates and blinks again and the alarm sounds again.

When the front passenger's seat belt is released

1. When the ignition switch is turned ON, the front passenger's seat belt indicator illuminates for 6 seconds, regardless of whether the front passenger's seat belt is fastened or released. The alarm does not sound.
2. 60 seconds after the ignition switch is turned ON, the front passenger's seat belt reminder operates the same manner as for the driver's seat belt that is released, but the alarm does not sound.

A/T SHIFT CANCEL TONE ALARM <A/T>
When the selector lever is operated, the tone alarm sounds.

PADDLE SHIFT CANCEL PROHIBITION TONE ALARM <A/T - VEHICLES WITH PADDLE SHIFT>
When the paddle shift switch is operated, the tone alarm sounds.

THEFT-ALARM FUNCTION
When the theft-alarm function is activated, the tone alarm sounds.

KEYLESS OPERATION KEY REMINDER TONE ALARM FUNCTION <VEHICLES WITH KOS>/IGNITION KEY REMINDER TONE ALARM FUNCTION
With the ignition switch in the LOCK (OFF) position, when the driver's door is opened with the ignition key inserted into the ignition key cylinder or the keyless operation key left in the vehicle, the tone alarm sounds.

LIGHT REMINDER TONE ALARM FUNCTION
With the ignition switch in the LOCK (OFF) position, when the driver's door is opened with the tail light switch remaining ON, the tone alarm sounds.

DOOR-AJAR WARNING TONE ALARM FUNCTION
With the ignition switch in the ON position, when any of the doors (except trunk) is opened and the vehicle speed information sent via the CAN communication is 8 km/h (5mph) or more, the tone alarm sounds.

FREEZE WARNING TONE ALARM
When the ignition switch is in the ON position, if the ambient temperature is at 0° C (32° F) or below, the tone alarm sounds.

PARKING BRAKE REMINDER TONE ALARM FUNCTION
With the ignition switch in the ON position, if the parking brake has not been reset (parking brake switch: ON), and when the vehicle speed information transmitted via CAN communication is 8 km/h (5mph) or more, the tone alarm sounds.

MULTI INFORMATION DISPLAY INTERRUPT DISPLAY TONE ALARM
When the interrupt display is displayed on the multi information display because of alarms, the tone alarm sounds.

ETACS-ECU FUNCTION CUSTOMIZATION TONE ALARM

When entering into the customize mode of ETACS-ECU functions or when the customization is executed, the tone alarm sounds in each case.

A/C OPERATION TONE ALARM, AUDIO OPERATION TONE ALARM

According to the tone alarm sounding request signal which is received when the A/C, radio and CD player, CD changer or audio visual navigation unit is operated, the tone alarm sounds.

METER INFORMATION SWITCH OPERATION TONE ALARM

When the meter information switch or rheostat switch is operated, the tone alarm sounds.

TURN-SIGNAL LIGHT TONE ALARM FUNCTION

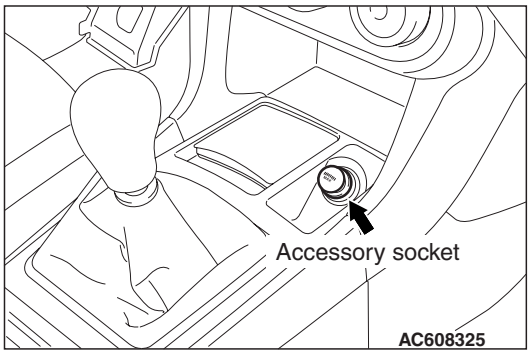
The tone alarm sounds in synchronization with the turn signal light operation.

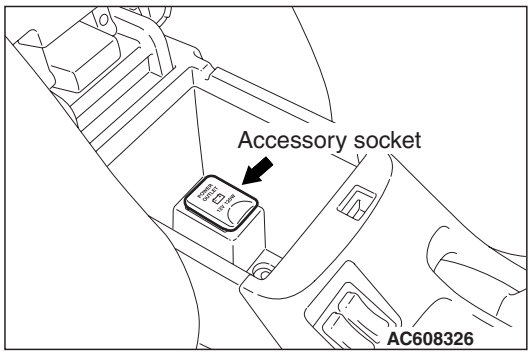
ACCESSORY SOCKET

GENERAL INFORMATION

M2544400200202

The plug-in type accessory socket has been installed for the convenient use of accessories.





AC608567

- Accessory socket has been added to the front floor console. This accessory socket can be replaced to the cigar lighter as an option.
- Accessory sockets have been added to the rear floor console. <ES,GTS>
- The maximum load is 120 W when a single accessory socket is used. When two accessory sockets are used simultaneously, the combined maximum load for two sockets is 120 W.

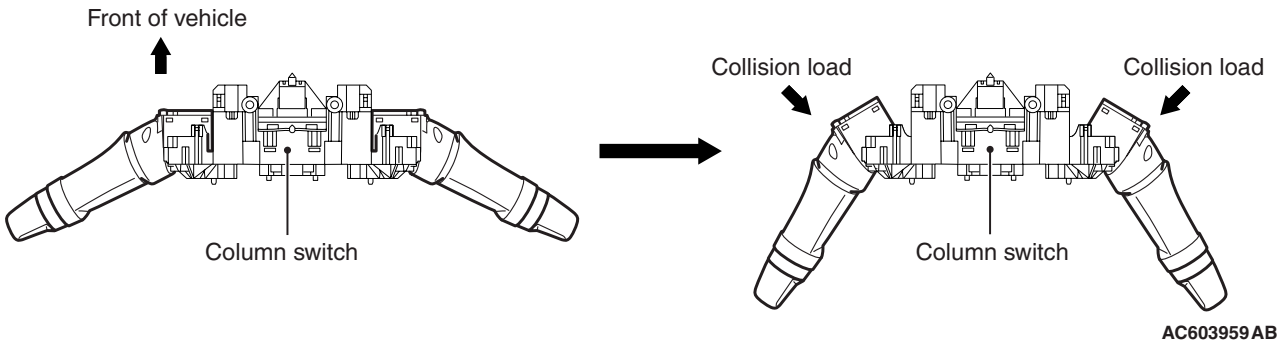
COLUMN SWITCH

GENERAL INFORMATION

M2546100200058

Column switch has a function to ensure the driver's safety during frontal collision of vehicle.

Function

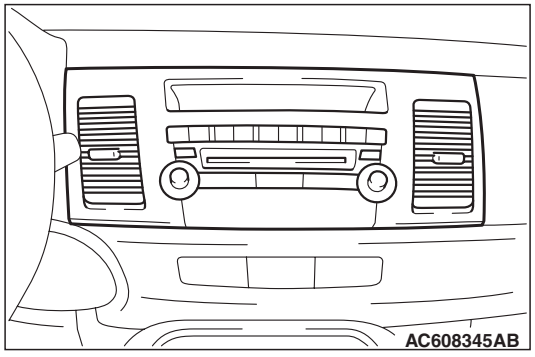


If the column switch is moved to the front of the vehicle and hit on the instrument panel or meter bezel by the frontal collision of vehicle, the steering wheel is moved to the front of the vehicle because the right and left levers fall down, ensuring the driver's safety. In addition, the column switch secures the rigidity that the levers do not fall down by the normal operation, however, it cannot be reused after the deformation.

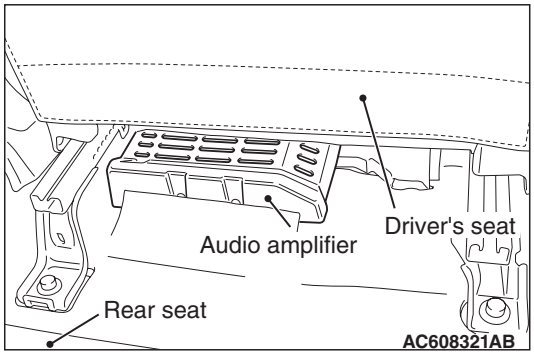
RADIO AND CD PLAYER

GENERAL INFORMATION

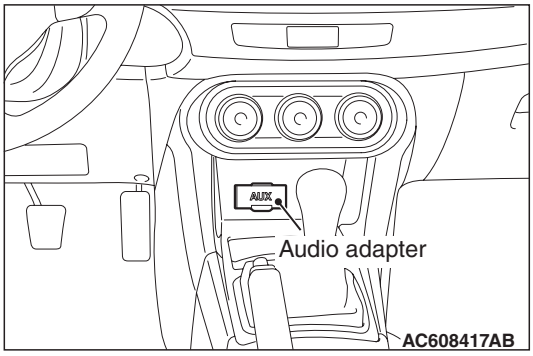
M2544900200218



- Two types of audio, CD player with radio or 6-disk CD changer with radio, have been established. The audio was designed to create a uniformity impression with the instrument panel. Also, a new function automatically corrects the sound quality and volume during driving.



- For the vehicles with Rockford Fosgate ® premium sound system, the 8-ch high-power audio amplifier with integrated DSP (total maximum output of 650 W) has been established under the driver's seat. The clear treble without distortion is available.



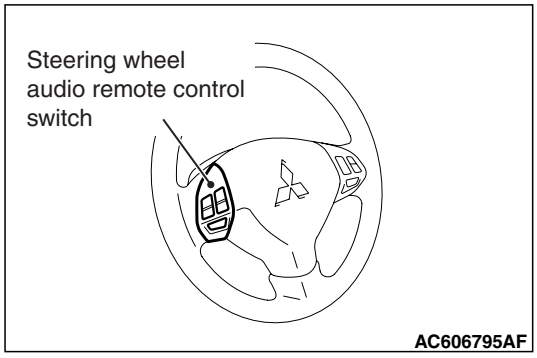
- For the vehicles with Rockford Fosgate ® premium sound system, the audio adapter has been established onto the center tray. With this modification, portable music player can be connected. <Vehicles without MMCS>

Item	CD player with radio	6-disk CD changer with radio <Option>
Electronic tuning radio	Equipped	Equipped
SIRIUS satellite radio <Option: ES, GTS>	–	Equipped (Only the vehicles with the satellite radio tuner)
CD player*1 (compatible with MP3*2)	Equipped	Equipped
6-disk CD autochanger*1 (compatible with MP3*2)	–	Equipped
Audio integrated 4-ch power amplifier <vehicles with 4 speakers, 6 speakers>	General 140 W	General 140 W
Audio amplifier-integrated 8-ch power amplifier and digital signal processor (DSP) <Rockford Fosgate® premium sound system>	–	General 650 W (maximum)

NOTE:

- **1: CD-R/CD-RW may not be played.*
- **2: Some may not be played.*

STEERING WHEEL AUDIO REMOTE CONTROL SWITCH



The concentrated switch has been established onto the steering wheel spoke for allowing the remote control of audio. <ES, GTS>

AUDIO OPERATION TONE ALARM

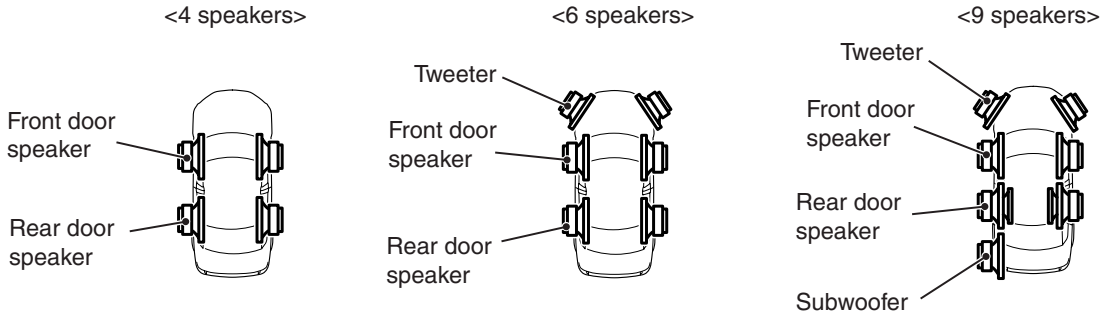
To prevent an audio operational error, the audio operation tone alarm confirms the audio operation which sounds a tone alarm in the combination meter when the audio is operated. The details are as described in the following table:

Usage category	**Confirmation tone alarm sounding condition (with conditions below, tone alarm sounds for 0.08 seconds)**
Radio use	Press and hold "1", "2", "3", "4", "5" or "6" button.
	Press and hold "SCAN" button.
CD use	Press and hold the "LOAD" button.
	Press and hold the "DISC" button.
	Press and hold the "RPT" button.
	Press and hold the "RDM" button.
	Press and hold the CD eject button
Audio adjustment	With "BASS", "MID", "TREBLE", "BALANCE", or "FADER" selected, adjust the adjustment level to zero.
	Select "NORMAL" of "SOUND FIELD".
	Select "NORMAL" of "MUSIC TYPE".
Others	Press and hold the "TUNE" knob.
	Press and hold the "MODE" switch of steering remote control switch.

SPEAKER

GENERAL INFORMATION

M2545000200177



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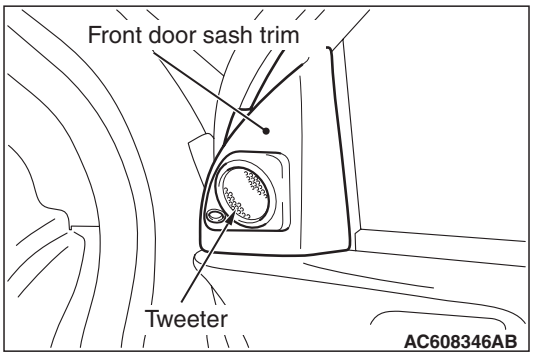
The following three types of speakers are available.

- 4 speakers (Front door: 16 cm, rear door: 16 cm)
- 6 speakers (tweeter: 3.5 cm, front door: 16 cm, rear door: 16 cm)
- 9 speakers (tweeter: 3.5 cm, front door: 16 cm, rear door: 2-way coaxial 16 cm, subwoofer: 25 cm) <Rockford Fosgate® premium sound system>

TWEETER



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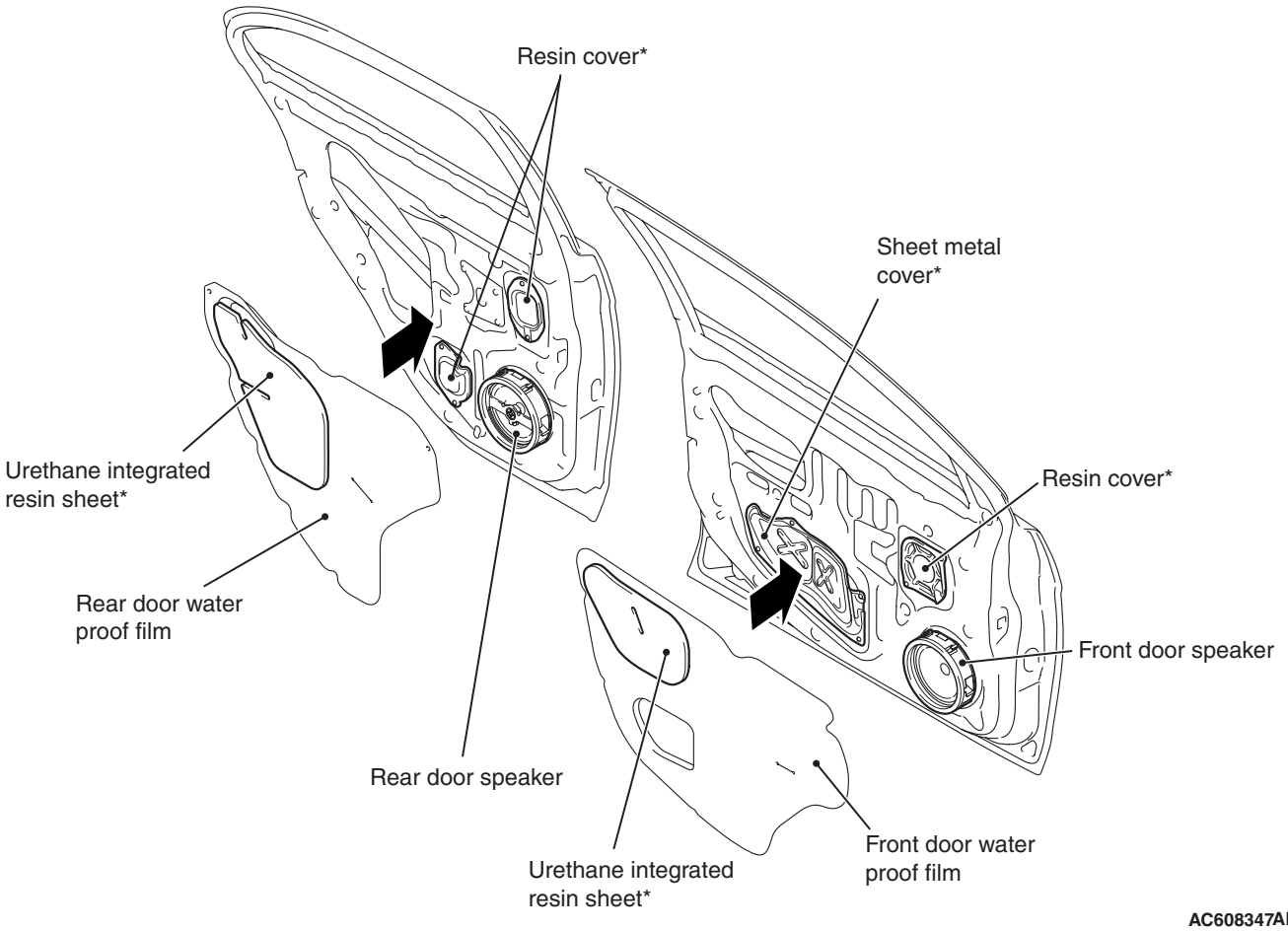
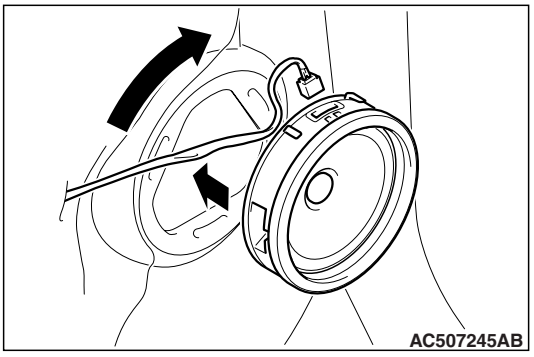
For the front door sash trim, two types of tweeters, the balance dome tweeter <Vehicles with 6 speakers> and soft dome tweeter <Vehicles with 9 speakers (Rockford Fosgate ® premium sound system)>, have been established. The soft dome tweeter can play clearer treble with less distortion compared to the balance dome tweeter. For the better treble, two types of front sash garnish, resin type <Vehicles with 6 speakers> and punching metal type <Rockford Fosgate ® premium sound system>, has been established. With the punching metal type, the metal has been adopted for the punching part to enlarge the punching opening, enabling the playback of cleaner treble.

DOOR SPEAKER



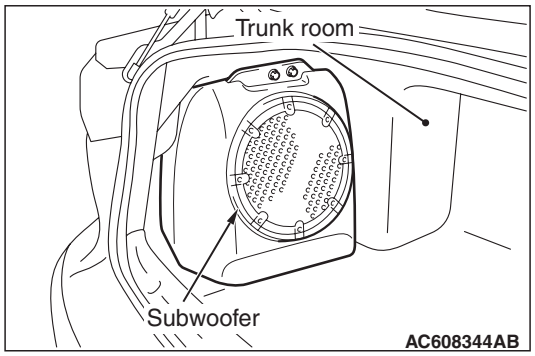
NOTE: The parts with "" are installed exclusively to the vehicles with Rockford Fosgate® premium sound system.*

For the front door speaker, two types of speakers, 16 cm paper cone speaker <vehicles with 4 speakers, 6 speakers> and PP (polypropylene) cone speaker <Rockford Fosgate® premium sound system>, are available. For the rear door speaker, two types of speakers, 16 cm paper cone speaker <Vehicles with 4 speakers, 6 speakers> and PP (polypropylene) cone 2-way coaxial speaker <Vehicles with 9 speakers (Rockford Fosgate® premium sound system)>, are available. Compared to the paper cone speakers, the PP (polypropylene) cone speakers can playback crisper bass. The door opening of the vehicles with 9 speaker (Rockford Fosgate® premium sound system) is blocked by using the sheet metal cover and the urethane integrated resin sheet (resin cover and water proof film) to make the door into a speaker box, thus improving the sound quality. As an advantage of the sheet metal cover, the rigidity of the areas around the speaker has been increased, and the higher sound pressure, suppression of high harmonic, and suppression of dumping are achieved to improve sound quality.



The one-touch installable speaker (with 3 tabs, fixed by rotating) has been adopted to improve serviceability.

SUBWOOFER <VEHICLES WITH Rockford Fosgate® PREMIUM SOUND SYSTEM>



The 25 cm dual voice coil subwoofer has been installed to the trunk room, enabling the playback of dynamic deep bass.

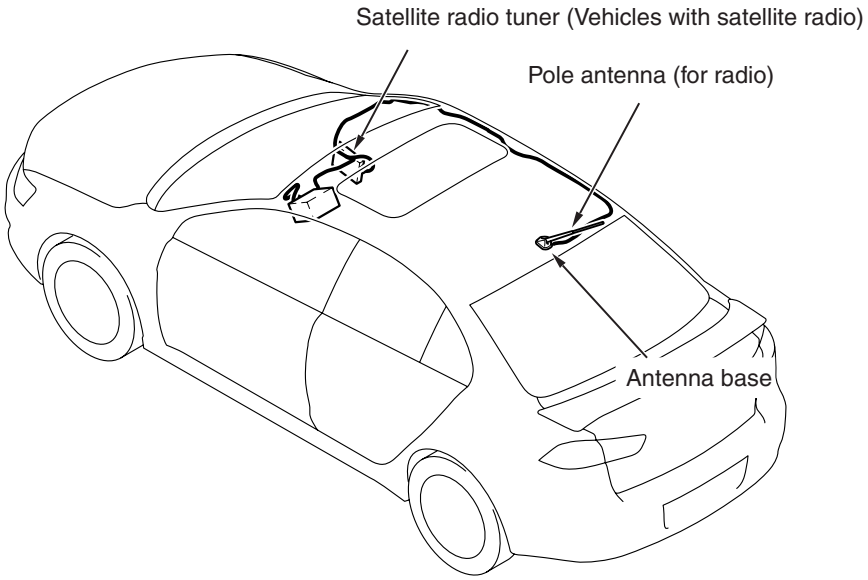
ANTENNA

GENERAL INFORMATION

M2545100200163

The pole antenna has been adopted for the radio. The antenna base incorporates the radio amplifier. When the satellite radio tuner is installed, the antenna base that also corresponds to the satellite radio is installed.

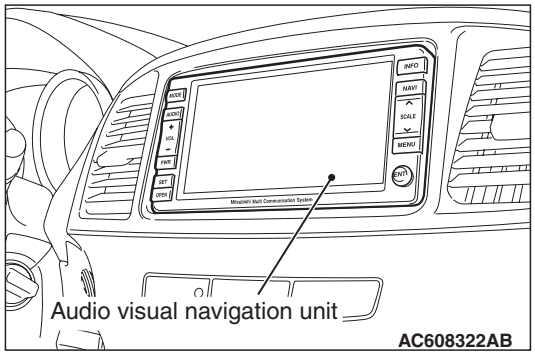
CONSTRUCTION DIAGRAM



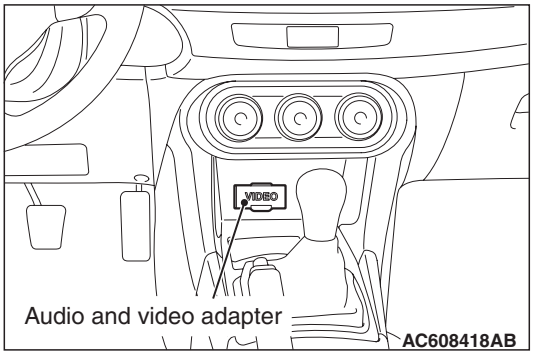
MITSUBISHI MULTI COMMUNICATION SYSTEM (MMCS)

GENERAL INFORMATION

M2544800200084

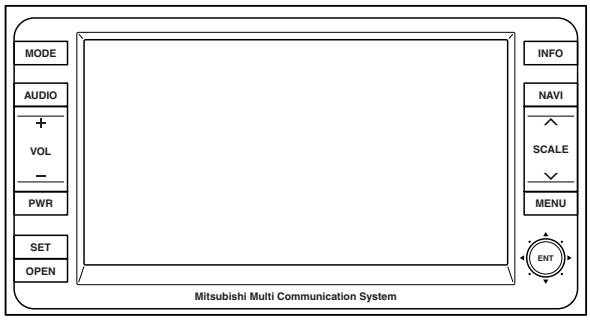


Mitsubishi multi-communication system (audio visual navigation unit) with built-in hard disk drive (30 gigabyte) has been installed. Also, a 7-inch liquid crystal display of wide 2 DIN size has been adopted. <Option>



The audio and video adapter has been established to the center tray in order to connect visual equipment such as game machine and video player. <Vehicles with MMCS>

Operation part



Display (function)	Contents
Navigation screen	Displays the navigation functions including the map display, search, guidance, information search.
Vehicle position information screen	Displays the position information of current location. (Longitude and latitude, altitude, GPS reception status)
CD screen	Plays back the disc inserted to the CD drive (CD-R/CD-RW).
MP3/WMA screen	Plays back the MP3/WMA.
DVD screen	Plays back the disc inserted to the DVD drive.
Music server function	Plays back the music data on hard disk drive, and records the music CD.
Radio screen	Displays the receiving station information. Also, the operation of receiving channel can be performed.

Navigation function

The storage of very large map data is now possible, and the following contents have been adopted.

- Map type navigation
- NAVTEQ map database
- Map data stored in hard disc drive
- U.S. English, French, and Spanish are available to select.

Audio and visual function

The following functions are in addition to the navigation function:

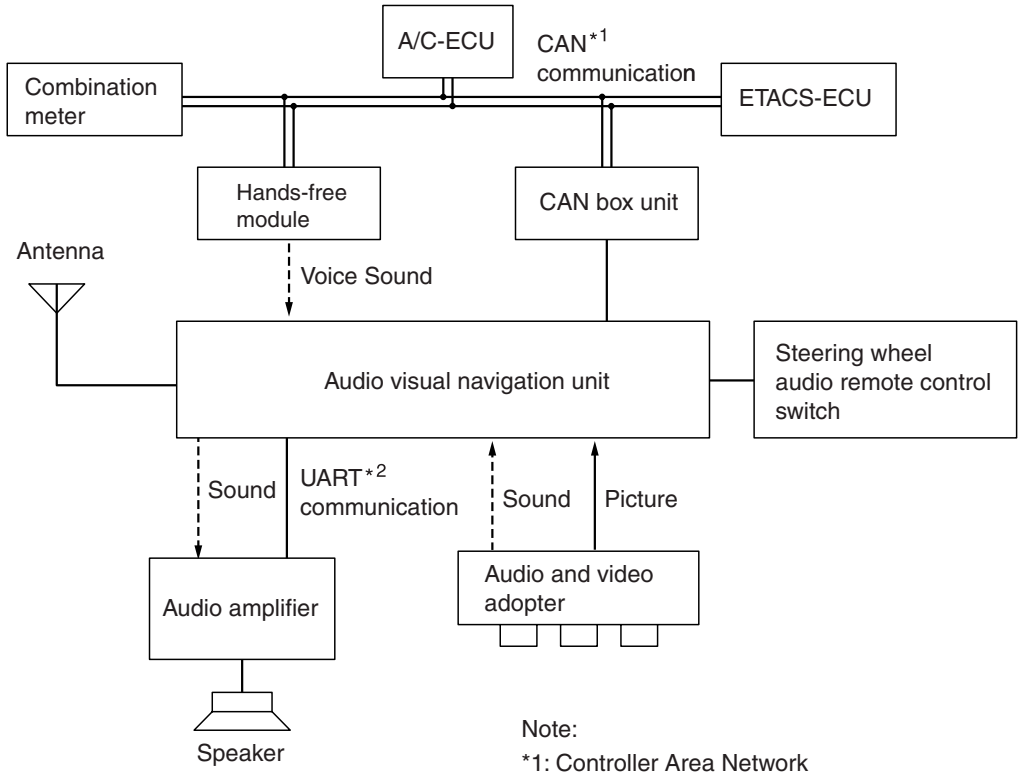
- Music server function
- DVD drive unit
- FM/AM radio
- MP3/WMA playback function
- Control by steering wheel audio remote comtrol switch
- Integrated 4-ch power amplifier (MAX: 180 W)
- Correspond to Rockford Fosgate® premium sound system
- Output of DVD video 5.1 channel data
- Connect with satellite radio tuner

Other function

The following functions are in addition to the navigation, audio and visual function:

- Clock display
- Connect with hands free unit
- A/C information display
- Outside temperature display
- Trip information display (Average fuel consumption etc.)
- Function customize

SYSTEM BLOCK DIAGRAM



Note:
*1: Controller Area Network
*2: Universal Asynchronous Receiver Transmitter

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HANDS-FREE CELLULAR PHONE SYSTEM

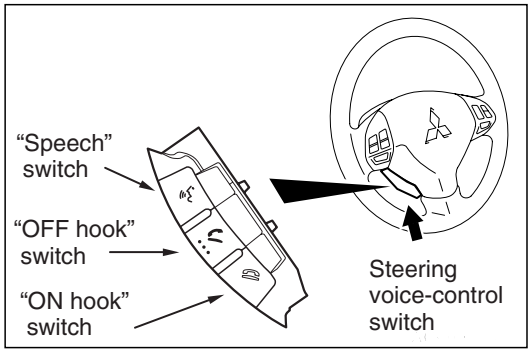
GENERAL INFORMATION

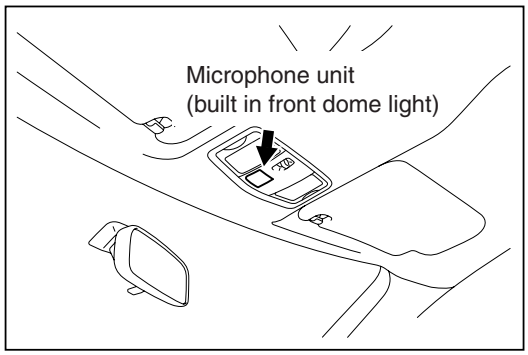
M2546400200015

With the hands-free cellular phone system <GTS: Standard, DE, ES: Option> by registering a cellular phone for Bluetooth™* with voice recognition to the hands free module, the telephone function becomes available without operating the cellular phone directly. The hands-free cellular phone system can be used without connecting the cellular phone to the vehicle via wiring cable.

*NOTE: *: Bluetooth™ is the short-distance digital wireless communication technology using 2.45 GHz frequency band. The communication effective area is within 10 m, and the feature is that the communication can be achieved even when an obstacle is present between the communicating devices.*

Construction diagram





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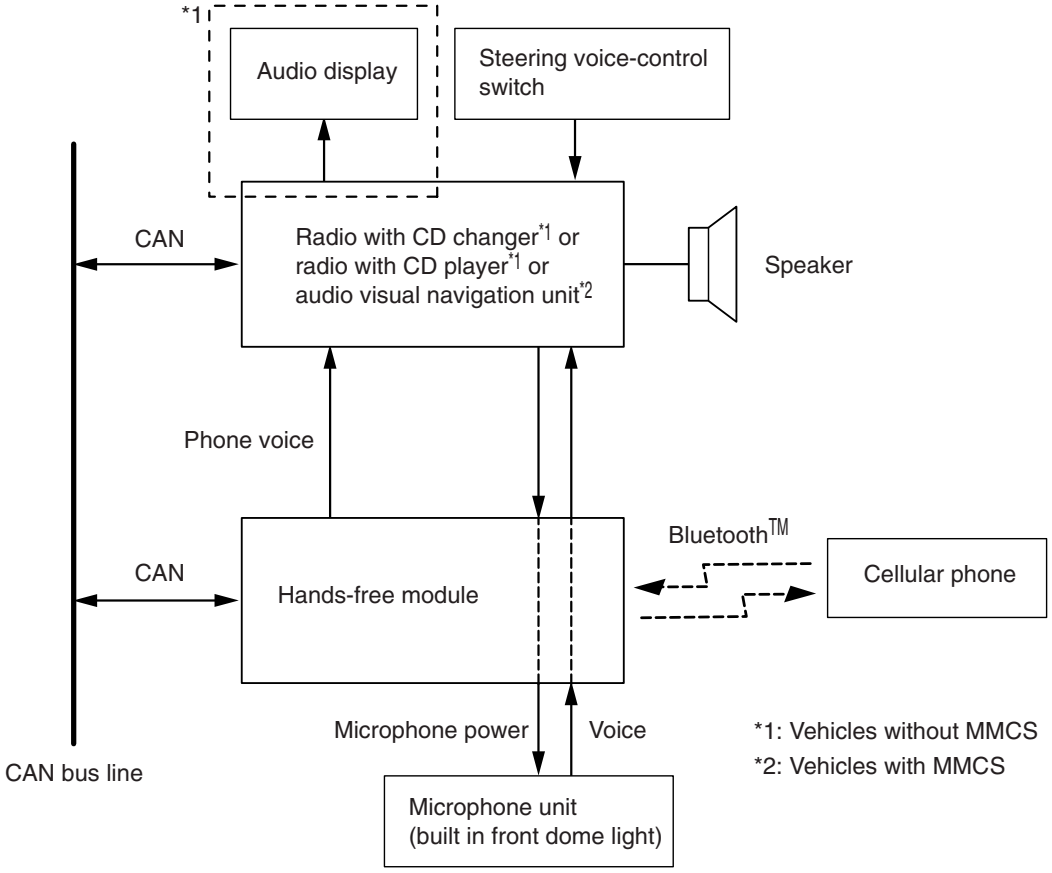
When the registered cellular phone is inside the vehicle, the hands-free cellular phone system operates as follows.

NOTE: The owner's manual contains details on pairing a cellular phone with the Bluetooth system, speaker enrollment, and other functions.

- When the cellular phone receives a call, the occupant can start conversation by pressing "OFF hook" in the steering voice-control switches on the steering wheel. When the conversation ends, the occupant can finish the call by pressing "ON hook" in the steering voice-control switches.
- To make a call, press "Speech" in the steering voice-control switches on the steering wheel, call up the registered receiver's information in the voice input mode, press "OFF hook". Then, the transmission starts to call the receiver. Also, when the conversation ends, the occupant can finish the call by pressing "ON hook" in the steering voice-control switches.
- The communication directly via a cellular phone can be switched to the communication via a handsfree device. Also, the communication via a handsfree device can be switched to the communication directly via a cellular phone.
- The voice input mode corresponds to the following languages: English, American Spanish, Canadian French.
- The voice of occupant is picked up by the microphone unit incorporated in the front dome light, and then transmitted to the cellular phone via hands-free module. Also, the receiver's voice is transmitted from the cellular phone to radio with CD player, radio with CD changer <vehicles without MMCS> or audio visual navigation unit <vehicles with MMCS> via hands-free module, and then output from the vehicle-mounted speaker.
- Using the steering audio remote control switch, the volume can be adjusted.
- The reception state of the cellular phone is indicated on the display section of radio with CD player, radio with CD changer <vehicles without MMCS> or audio visual navigation unit <vehicles with MMCS>.

System block diagram



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ETACS

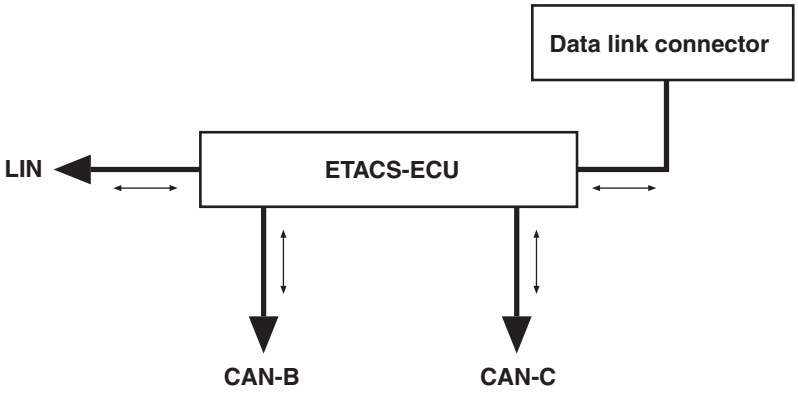
GENERAL INFORMATION

M2545400200186

ETACS*-ECU has three main functions.

*NOTE: *: ETACS (Electronic Time and Alarm Control System)*

GATEWAY FUNCTION



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As a central ECU for the on-vehicle communication network system established in the vehicle, the gateway function is integrated into ETACS-ECU. The gateway function offers the following functions:

- Data transfer among four networks*1
  Transfers the data flowing in a network to another network in real time.
  *NOTE: *1: CAN*2*-C (power train network), CAN*2*-B (middle-speed body network), LIN *3(low-speed body network), diagnostics CAN-C (diagnosis exclusive network)*
  *NOTE: *2: For details of CAN, refer to GROUP 54C, Controller Area Network (CAN) P.54C-2.*
  *NOTE: *3: For details of LIN, refer to GROUP 54B, Local Interconnect Network (LIN) P.54B-2.*
- Diagnosis of each network communication line
  Detects and stores an open circuit and short circuit of communication line.
- Communication error diagnosis of network ECUs
  Detects and stores the ECU that is not properly transmitting data.

CODING FUNCTION

By writing the coding data such as vehicle model, destination, and equipment level to ECUs, the functions of ECUs can be changed. There are two types of coding method, the local coding and global coding.

BODY ELECTRICAL EQUIPMENT CONTROL FUNCTION

This function controls the following electrical equipment.

- Exterior lights
- Wiper, washer
- Central door locking system
- Interior light
- Keyless entry, keyless operation system
- Theft alarm system

FUNCTION AND CONTROL BY ETACS-ECU

M2545400300097

ACC power supply automatic shutdown function (THE INITIAL CONDITION: NO FUNCTION)

The function to shutdown the ACC power supply after 30 or 60 minutes with the ignition switch being ACC has been adopted. With this adoption, in addition to the headlight automatic shutdown function and interior light automatic shutdown function, the function to prevent the battery discharge has been improved.

CONFIGURATION FUNCTION

M2545400400168

Using the M.U.T.-III, the following functions can be programmed. The programmed information is held even when the battery is disconnected.

Adjustment item (M.U.T.-III display)	Adjustment item	Adjusting contents (M.U.T.-III display)	Adjusting contents
ACC power auto cut	Time to ACC power cut-off when the ignition switch is in the ACC position	Disable	No function (default)
		30 min	30 minutes
		60 min	60 minutes
Turn power source	Adjustment of turn-signal light operation condition	ACC or IG1	Operable with ACC or ON position
		IG1	Operable with ON position (default)
Comfort flasher	With/without comfort flasher function	Disable	No function
		Enable	With function (default)
Comfort flasher switch time	Switch operation time to activate the comfort flasher function	Normal	0.4 seconds (default)
		Long	0.8 seconds
Hazard answer back	Adjustment of the number of keyless hazard warning light answer back flashes	Lock:1, Unlock:2	LOCK: Flashes once, UNLOCK: Flashes twice (default)
		Lock:1, Unlock:0	LOCK: Flashes once, UNLOCK: No flash
		Lock:0, Unlock:2	LOCK: No flash, UNLOCK: Flash twice
		Lock:2, Unlock:1	LOCK: Flash twice, UNLOCK: Flash once
		Lock:2, Unlock:0	LOCK: Flash twice, UNLOCK: No flash
		Lock:0, Unlock:1	LOCK: No flash, UNLOCK: Flash once
		Lock:0, Unlock:0	No function

Adjustment item (M.U.T.-III display)	Adjustment item	Adjusting contents (M.U.T.-III display)	Adjusting contents
Front wiper operation	Adjustment of the intermittent windshield wiper operation	Normal INT	Intermittent wiper interval is fixed to 4 seconds.
		Variable INT	Intermittent wiper interval is calculated only by the wiper volume control.
		Speed sensitive	Intermittent wiper interval is calculated according to the intermittent wiper volume control and vehicle speed (default).
Front wiper washer	Disabling or enabling washer-linked wiper function	Only washer	No function
		Washer and wiper	With function (default)
Dome light delay timer with door	Adjustment of interior light delay shutdown time	0sec	0 second (no delay shutdown time) (default <Vehicles without central door locking system>)
		7.5sec	7.5 seconds
		15sec	15 seconds
		30sec	30 seconds (default <Vehicles with central door locking system>)
		60sec	60 seconds
		120sec	120 seconds
		180sec	180 seconds
Headlight auto cut customize	Adjustment of headlight automatic shutdown function	Disable	No function
		Enable (C-spec.)	With function (default)
Interior light auto cut timer	Adjustment of interior light automatic shutdown function operation time	Disable	No function
		3min	3 minutes
		30min	30 minutes (default)
		60min	60 minutes
Door unlock mode	Door lock system <Vehicles with central door locking system>	All doors unlock	All the doors are unlocked when the driver's side door is unlocked.
		Dr door unlock	Only the driver's side door is unlocked when the driver's side door is unlocked. (default)
Auto door unlock by P position	Auto door unlock by P position function <Vehicles with central door locking system>	Disable	No function (default)
		Always enabled	Always with function
Duration of horn chirp	Horn sounding time during horn answer back	Short	0.01 second (default)
		Long	0.02 second

Adjustment item (M.U.T.-III display)	Adjustment item	Adjusting contents (M.U.T.-III display)	Adjusting contents
Horn chirp by keyless	Horn chirp by keyless entry system	Not sound horn	No horn answerback function
		Lock any time	The horn sounds when the lock button of keyless entry transmitter is pressed once.
		W lock any time	The horn sounds when the lock button of keyless entry transmitter is pressed twice. (default)
Buzzer answer back <Vehicles with KOS>	Adjusts the tone alarm answer back function	Not sound buzzer	No function
		At keyless	Sounds when the keyless entry system is activated.
		At F.A.S.T.	Sounds when KOS is activated (default).
		At Both	Sounds when the keyless entry system or KOS is activated.
Timer lock timer	Timer lock period adjustment	30sec	30 seconds (default)
		60sec	60 seconds
		120sec	120 seconds
		180sec	180 seconds
Panic alarm switch	With/without panic alarm function	Disable	No function
		Enable	With function (default)
F.A.S.T. key out of car	With/without KOS key exterior detection function	Enable	No function
		Disable	With function (default)
F.A.S.T. feature	KOS function adjustment	Both enable	All KOS functions are enabled (default).
		DoorEntry enable	Only door entry function is enabled.
		ENG strt enable	Only engine starting function is enabled.
		Both disabled	All KOS functions are disabled.
F.A.S.T. unlock disable time	Adjusts the door unlock inhibition period after door lock is activated	0sec	0 seconds
		3sec	3 seconds (default)
		5sec	5 seconds

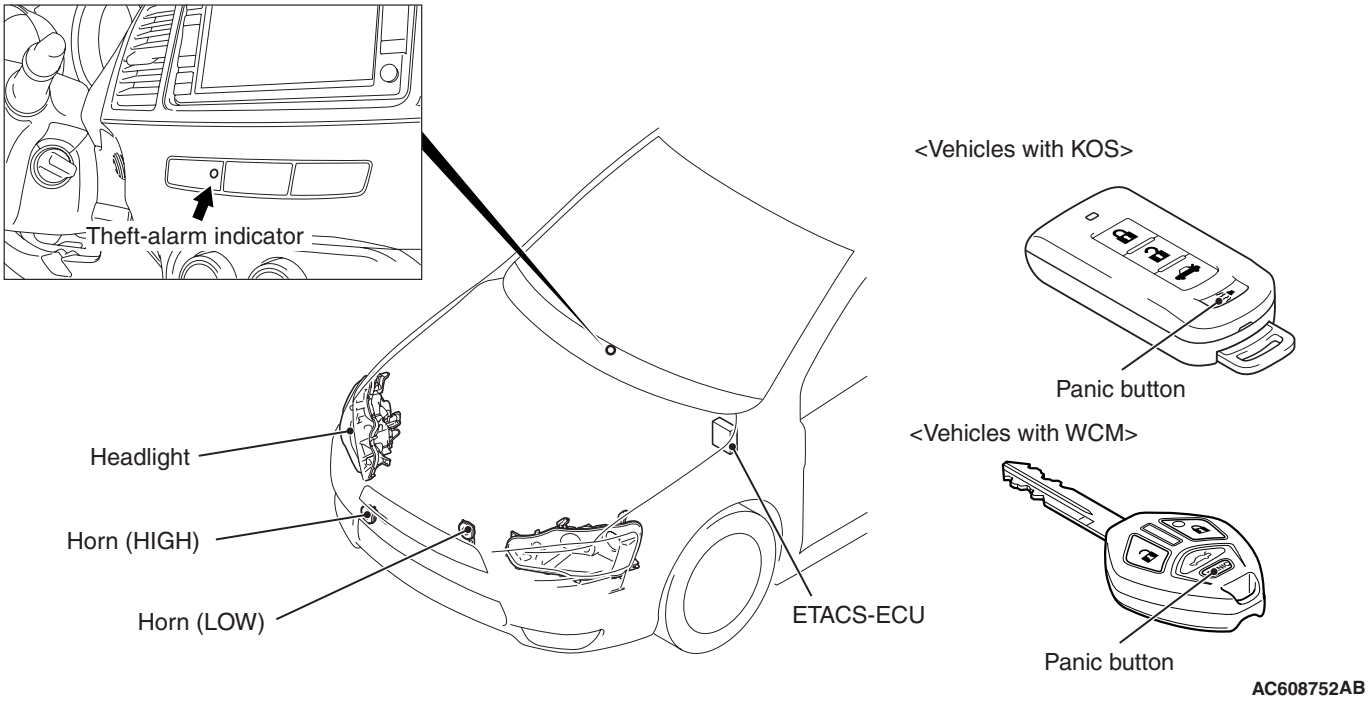
THEFT-ALARM SYSTEM

GENERAL INFORMATION

M2540000100711

- When the doors are locked using the keyless entry or KOS (except when locked by using the key cylinder or door lock switch), the improper opening of door or trunk causes the ETACS-ECU function and control to give off an alarm with the flashing of headlights and the intermittent sounding of horns. Also, the ETACS-ECU warns that the theft-alarm system is being set by flashing the theft-alarm indicator (Refer to ETACS-ECU function and controls P.54A-36). < ES,GTS: Standard, DE (Except for California and Canada): Option>
- By pressing the panic button of transmitter, the flashing of headlights and the intermittent sounding of horns can be performed by remote control operation. < ES,GTS: Standard, DE (Except for California and Canada): Option>

CONSTRUCTION DIAGRAM



DATA LIST

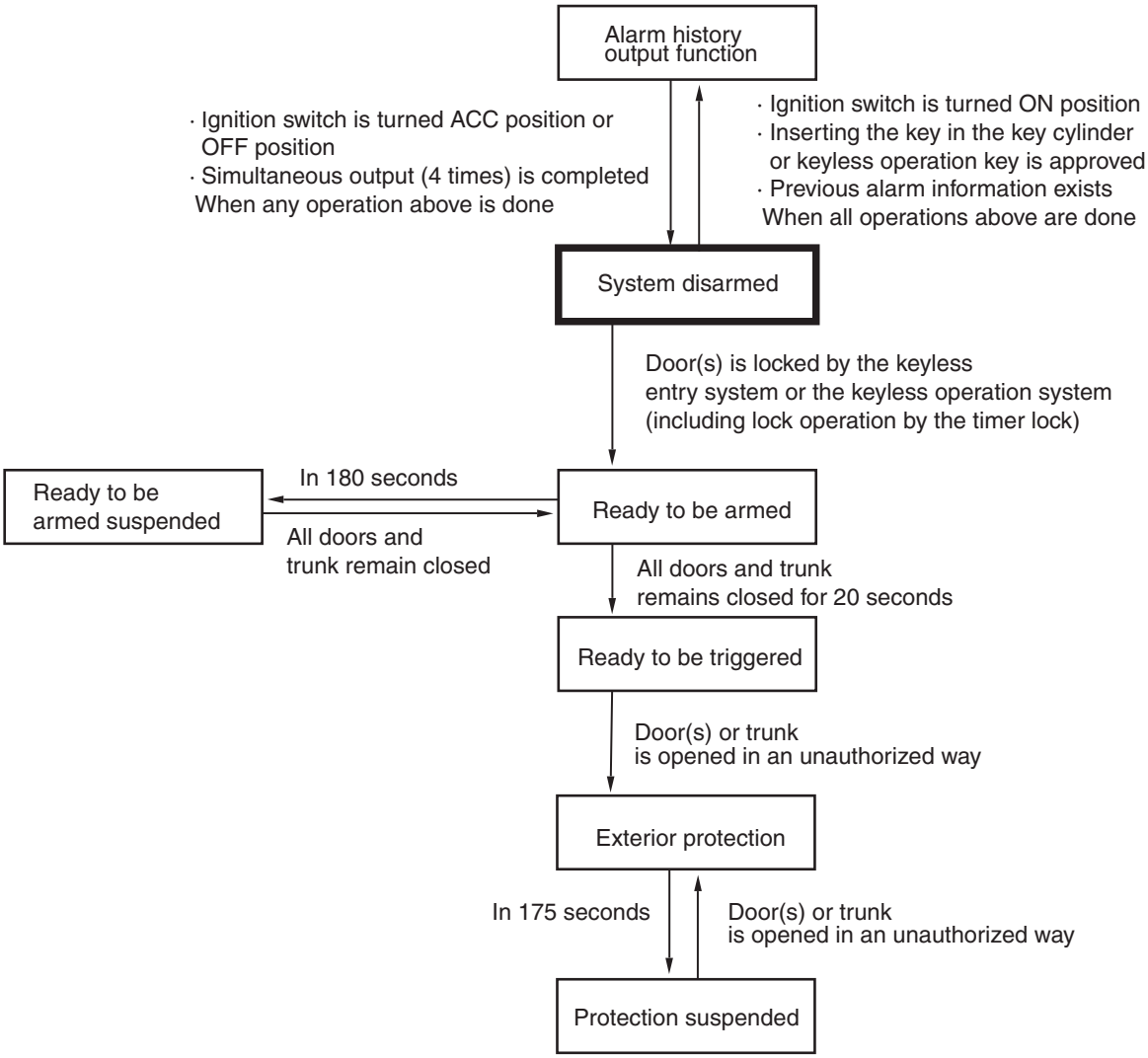
M2545700500058

Using the M.U.T.-III scan tool MB991958, the input data sent from the sensors and switches can be read. For service data items, refer to Service Manual.

ETACS-ECU FUNCTIONS AND CONTROL

M2545700300076

THEFT-ALARM FUNCTION


Alarm history output function
· Ignition switch is turned ACC position or OFF position
· Simultaneous output (4 times) is completed
When any operation above is done
· Ignition switch is turned ON position
· Inserting the key in the key cylinder or keyless operation key is approved
· Previous alarm information exists
When all operations above are done
System disarmed
Door(s) is locked by the keyless entry system or the keyless operation system (including lock operation by the timer lock)
Ready to be armed suspended
In 180 seconds
All doors and trunk remain closed
Ready to be armed
All doors and trunk remains closed for 20 seconds
Ready to be triggered
Door(s) or trunk is opened in an unauthorized way
Exterior protection
In 175 seconds
Door(s) or trunk is opened in an unauthorized way
Protection suspended

AC608519AB

Operating the door lock with the keyless entry transmitter or keyless operation key (except for operating the door lock with the key cylinder) makes the vehicle ready for the alarm, and "ping" tone starts. After 20 seconds, the incorrect door/trunk opening (opening door or trunk without unlocking by the keyless entry transmitter or keyless operation key) sounds the room alarm with "Beep" tone under for the alarm state. In addition, the headlights blink, and the horns sound intermittently for 175 seconds to execute exterior protection

ALARM HISTORY OUTPUT FUNCTION

If the exterior protection is activated between the last OFF operation and the next ON operation of the ignition switch, this function informs the driver by flashing the security indicator and by the buzzer.

CONFIGURATION FUNCTION

M2545700400073

Using scan tool MB991958 adjusts the following function. The programmed information is held even when the battery is disconnected.

Adjustment item (scan tool MB991958 display)	Adjustment item	Adjusting contents (scan tool MB991958 display)	Adjusting contents
Panic alarm switch	With/without panic alarm function	Disable	Without function
		Enable	With function (default)

NOTES